

CLAIMS

WHAT IS CLAIMED IS:

1. A method for adapting multicast services over a satellite network, the method comprising:
receiving a request for establishing a multicast session associated with a network address conforming to a first communication protocol;
assigning an address conforming to a second communication protocol for a multicast group of satellite terminals within the satellite network to map to the network address;
and
transmitting configuration information including the assigned satellite address to the satellite terminals for establishment of the multicast session.
2. A method according to claim 1, further comprising:
generating a multicast distribution tree associated with the multicast group; and
updating the multicast distribution tree according to membership of the multicast group.
3. A method according to claim 1, wherein the first communication protocol in the receiving step is at a higher layer than the second communication protocol.
4. A method according to claim 1, further comprising:
establishing the multicast session according to one of an on-demand basis and a predetermined schedule.
5. A method according to claim 1, wherein the schedule in the establishing step is specified in the request by a network service provider.

6. A method according to claim 1, wherein the configuration information in the transmitting step further includes a transmission rate of the multicast session and type of multicast session.

7. A method according to claim 1, further comprising:
selecting one of a plurality of distribution schemes for transport of dataflow over the satellite network to the assigned satellite address.

8. A method according to claim 7, wherein the distribution schemes in the selecting step specify use of a one or more spot beams, a broadcast beam, or a combination thereof.

9. A computer-readable medium bearing instructions for adapting multicast services over a satellite network, the instructions being arranged, upon execution, to cause one or more processors to perform the step of a method according to claim 1.

10. A method for adapting multicast services originated by a terrestrial network over a satellite network, the method comprising:
detecting a dataflow supporting a multicast from a source host within the terrestrial network;
transmitting a request for establishing a multicast session over the satellite network to a hub station, the request specifying a multicast network address supported by the terrestrial network, wherein the hub station selectively assigns a satellite address that maps to the multicast network address and configures a satellite within the satellite network with a multicast distribution plan of participating satellite terminals; and
receiving an acknowledgement message from the hub station specifying the satellite address, wherein the dataflow is forwarded by the source host over the satellite network to the participating satellite terminals according to the satellite address.

11. A method according to claim 10, wherein the satellite address in the transmitting step is associated with a lower protocol layer than the multicast network address.

12. A method according to claim 11, wherein the lower protocol layer is a Data Link Layer, and the multicast network address is an Internet Protocol (IP) address.

13. A method according to claim 10, wherein the multicast session is supported over the satellite network according to a distribution scheme that includes use of one of a spot beam and a broadcast beam.

14. A computer-readable medium bearing instructions for adapting multicast services originated by a terrestrial network over a satellite network, the instructions being arranged, upon execution, to cause one or more processors to perform the step of a method according to claim 10.

15. A method for providing a multicast session over a satellite network, the method comprising:

- identifying participating satellite terminals in the multicast session;
- determining whether one or more spot beams can cover the participating satellite terminals;
- selecting one of a plurality of distribution schemes based on the determining step; and
- selectively switching to another distribution scheme that utilizes a broadcast beam according to predetermined criteria.

16. A method according to claim 15, wherein the predetermined criteria include a threshold value for a number of downlink addresses for triggering switching to the other distribution scheme, the method further comprising:

- setting the threshold value based on one of system resources of the satellite network and cost.

17. A method according to claim 15, further comprising:

- determining whether packet replication is available for the multicast session for replicating packets over the one or more spot beams, the multicast session being

assigned one of a plurality of replication group numbers for supporting multiple multicast sessions.

18. A method according to claim 15, wherein the satellite terminals in the identifying step are Very Small Aperture Terminal (VSAT) terminals.

19. A computer-readable medium bearing instructions for providing a multicast session over a satellite network, the instructions being arranged, upon execution, to cause one or more processors to perform the step of a method according to claim 15.

20. A system for adapting multicast services over a satellite network, the system comprising:

means for receiving a request for establishing a multicast session associated with a network address conforming to a first communication protocol;
means for assigning an address conforming to a second communication protocol for a multicast group of satellite terminals within the satellite network to map to the network address; and
means for transmitting configuration information including the assigned satellite address to the satellite terminals for establishment of the multicast session.

21. A system for providing a multicast session over a satellite network, the system comprising:

means for identifying participating satellite terminals in the multicast session;
means for determining whether one or more spot beams can cover the participating satellite terminals;
means for selecting one of a plurality of distribution schemes based on the determination;
and
means for selectively switching to another distribution scheme that utilizes a broadcast beam according to a plurality of criteria.

22. A method for adapting multicast services originating from a terrestrial network over a satellite network, the method comprising:

receiving a request for establishing a multicast session corresponding to a network address of the terrestrial network, the request specifying participating satellite terminals in the multicast session;

assigning an address unique within the satellite network to map to the network address for the multicast session;

configuring the participating satellite terminals with the assigned satellite address; and

selecting one of a plurality of distribution mechanisms to transport dataflow of the multicast session to the participating satellite terminals, the distribution mechanisms utilizing one or more spot beams covering the participating satellite terminals, wherein the selected distribution mechanism is switched to another one of the distribution mechanisms based on capacity of the satellite network and reachability of the participating satellite terminals.